

*V Tune*

**TV/ FM Tuner**

with RS-232, IR, or Contact Closure Control



# Installation and Operations Manual

Manual Rev: 020901  
Firmware Rev: 1.00

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## 1.0 Product Description

The *VTune* is a 181-channel TV Tuner with composite video out. It is a perfect low cost TV or FM Tuner for any AV System. The VTune is also a great compliment to stand alone display devices such as Plasma, LCD, and CRT displays. Using the RS-232, IR, or Contact Closure Control ensures that this affordable compact TV/FM Tuner is easily integrated into any audio/video system.



### Features

- ▶ 181 Channel TV Tuner
- ▶ FM Tuner (87.5 - 107.9MHz)
- ▶ Composite Video Output
- ▶ Stereo Audio Output
- ▶ RS-232, IR, Contact Closure Control
- ▶ Includes Full Featured IR remote control

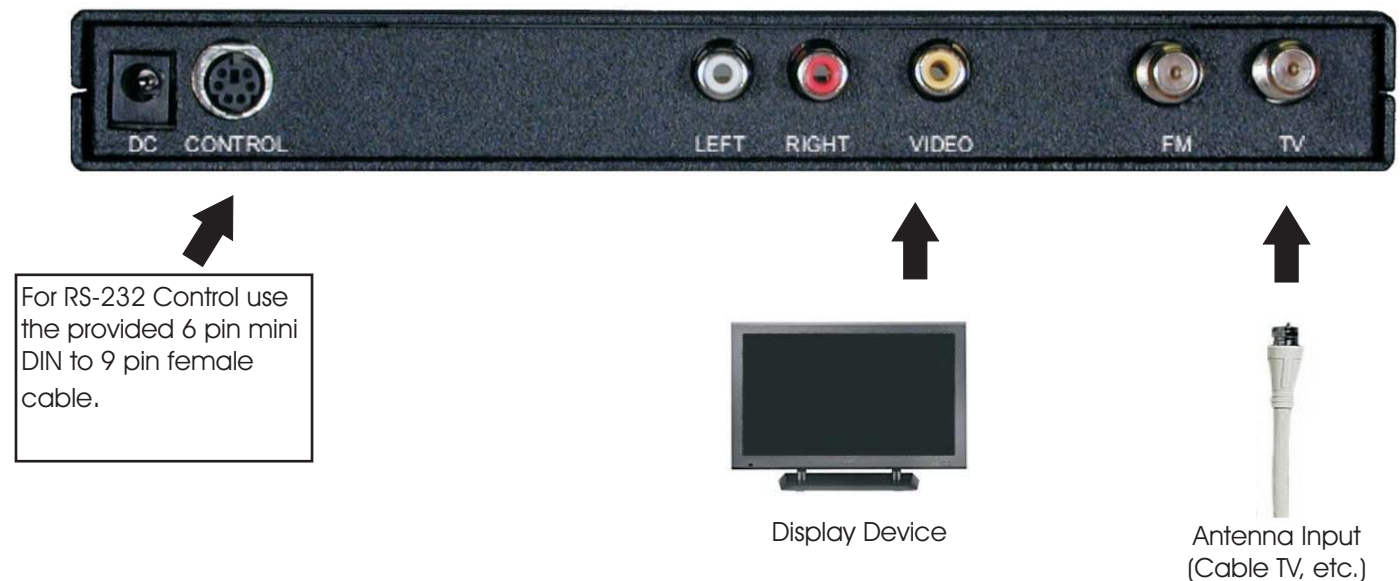
**2.0 Caution:** Static (Still) pictures will cause “burn in” on certain types of displays and may damage the display device. When using static images, reducing brightness and/or contrast can help reduce the risk of damage to the display device. Refer to the display’s owners and technical manual about additional precautions.

### 3.0 Unpacking

- (1) - VTune
- (1) - Installation and Operations Manual
- (1) - 12 Volt (15 Watt) power supply
- (1) - IRC-2 Remote
- (1) - 6 Pin Mini DIN Male - Female 9 Pin (Firmware Upgrade / RS-232 Control Cable)

Note: Please examine the VTune for any signs of shipping damage.

### 4.0 Installation



### VTune Setup/Connection

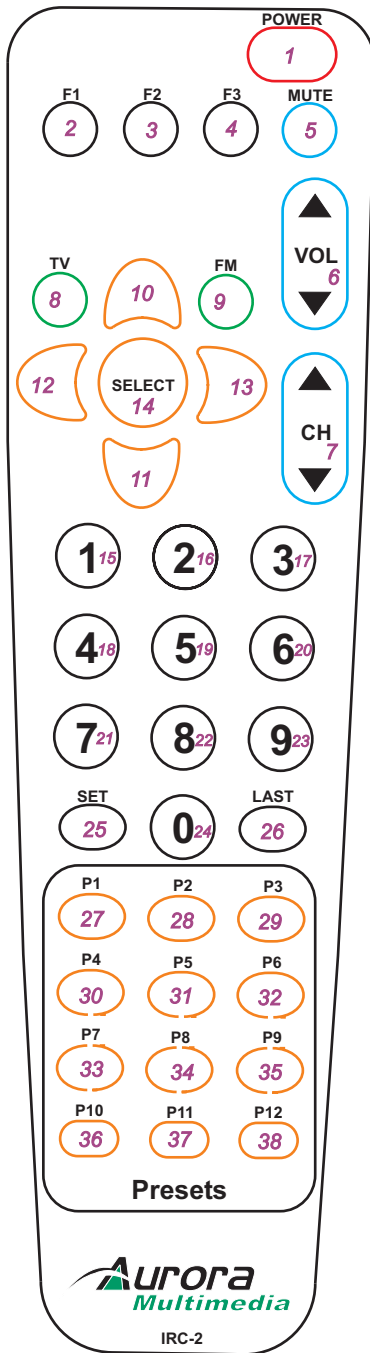
### 5.0 System Overview

The VTune is an RS232, contact closure, and IR controllable 181 Channel TV Tuner and FM Tuner. The unit was designed for easy integration into systems that need remote control of the capabilities. The powerful yet simple RS232 protocol gives a user full 2 way feedback of channel selections. Control systems can take advantage of the RS232 to allow true channel updating on a touch panel or web browser. Ordinary IR only tuners can not give this type of information. Kiosks can take advantage of the contact closure port for direct access of channel, volume, and source selection. Twelve built in presets make getting to a users favorite TV or FM channels a breeze.

Another great feature of the VTune is the ability to upgrade the firmware for additional features or fixes. Try to keep an eye out for the latest releases on [www.auroramultimedia.com](http://www.auroramultimedia.com) to take advantage of the new version. The firmware is easily upload to the VTune with the Flash123 utility that is free on our web site.

## 6.0 Remote Control

### Using the Aurora IRC-2 Remote Control



1. POWER - Turns on and off the VTune
2. F1 - Not Used (Future use)
3. F2 - Not Used (Future use)
4. F3 - Not Used (Future use)
7. MUTE - Toggles the volume mute on/off
8. VOLUME - Ramps the volume up or down
9. CHANNEL - Changes the TV channel + or -

#### Source Selection

10. TV INPUT - Selects the TV Antenna as the Main source
11. FM INPUT - Selects the FM Antenna as the Main source

15. UP ARROW - Not Used (Future use)
16. DOWN ARROW - Not Used (Future use)
17. LEFT ARROW - Not Used (Future use)
18. RIGHT ARROW - Not Used (Future use)
19. SELECT - Not Used (Future use)

15 - 24 Number Keys - Used for direct channel selection

25. SET - Pressing this and one of the Preset buttons within 1.5 seconds stores current current channel.

26. LAST - Returns to the last channel selected

#### Preset Selections

27 - 38 Preset Keys - P1 thru P12 selects the stored preset for TV or FM.

## 7.0 Front Panel



The VTune front panel is simple but very effective. The orange seven segment display shows the current TV channel selected for Main or PiP channel.

**Ch+:** Increments the TV or FM channel up

**Ch-:** Decrements the TV or FM channel down

**Vol+:** Raises the volume. Front LED display will show v 52 if the level is at 52 for example. Times out after 3 sec.

**Vol-:** Lowers the volume. Front LED display will show v 52 if the level is at 52 for example. Times out after 3 sec.

**TV:** Selects TV as the source

**FM:** Selects FM as the source

**Power:** Toggles the VTune power on and off. When turning on it takes about 2 seconds to initialize. If the VTune loses power it will turn on when power is returned.

### Special Functions:

**TV & Vol- pressed together:** With TV as the current selection pressing theses buttons together will allow a user to select broadcast, cable, HRC, IRC. The LED will display the selection with text.

## **8.0 Specifications**

### **RF Tuner**

Input Connector : 'F' type female

TV Frequency Range : 55.25 to 801.25 MHz, 31.25 or 62.5KHz fine tune

FM Frequency Range : 76.00 to 108.00 MHz, 50KHz fine tune

Demodulation: Quasi-Split Sound concept

### **Video Output**

Connector: RCA female Yellow

Output: Composite video

Impedance: 75 ohms

Typical Level: 1.0V peak-peak into 75 ohms

### **Audio Outputs**

Connectors: 2 RCA female      1 - Left (White)   1 - Right (Red)

Output: Unbalanced line level

Output Level: +12dB to -114dB in 64 steps

### **Dimension**

8.4"L x 5.65"D 1"H

### **Power**

12v DC

### **Compliance**

FCC Class B

## 9.0 Control Port

**RS232** - Pins 1,3,5 Note: Pin 2 must be disabled with jumper J9 removed (factory default)  
Pin 1 - Ground Pin 3 - TX Pin 5 - RX

**Contact Closure** - Pins 1,2,4,6 Note: Pin 2 must be enable with jumper J9 on VTune

Pins 1,2: TV Pins 1,4: Channel + Pins 1,6: Channel -  
Pins 1,4,6: FM Pins 1,2,4: Volume + Pins 1,2,6: Volume -



### 10.1 RS-232 Protocol

Baud Rate: 9600 8N1

*Note: Protocol below is as of firmware version 1.00 New commands will be available on future revisions to give more discrete full featured commands. Check on the Aurora website for the latest firmware and RS232 command additions.*

? IS A QUERY COMMAND (Does not have to be Case Sensitive)  
! IS A COMMAND (Does not have to be Case Sensitive)  
~ IS A RESPONSE (ALL RESPONSES ARE CAPITALS)

<CR> is 0D hex or 13 decimal

!KEY_LEFT<CR>	Left
!KEY_RIGHT<CR>	Right
!KEY_UP<CR>	Up arrow key
!KEY_DOWN<CR>	Down arrow key
!KEY_SEL<CR>	Select
!KEY_CH-<CR>	Channel Down
!KEY_CH+ <CR>	Channel Up
!KEY_LAST<CR>	Toggles between the last 2 channels selected
!KEY_0<CR>	0
!KEY_1<CR>	1
!KEY_2<CR>	2
!KEY_3<CR>	3
!KEY_4<CR>	4
!KEY_5<CR>	5
!KEY_6<CR>	6
!KEY_7<CR>	7
!KEY_8<CR>	8
!KEY_9<CR>	9
!KEY_SET<CR>	Set button for presets
!KEY_P1<CR>	Preset 1
!KEY_P2<CR>	Preset 2
!KEY_P3<CR>	Preset 3
!KEY_P4<CR>	Preset 4
!KEY_P5<CR>	Preset 5
!KEY_P6<CR>	Preset 6
!KEY_P7<CR>	Preset 7
!KEY_P8<CR>	Preset 8
!KEY_P9<CR>	Preset 9
!KEY_P10<CR>	Preset 10
!KEY_P11<CR>	Preset 11
!KEY_P12<CR>	Preset 12
!KEY_VOL+ <CR>	Volume up
!KEY_VOL-<CR>	Volume down
!KEY_MUTE<CR>	Volume mute



## 10.1 RS-232 Protocol (Continued)

!KEY_PWR<CR>	Power On / Off
!KEY_F1<CR>	Function 1 key used for Format selection (pillar box, letter box, etc)
!KEY_F2<CR>	Function 2 key (future use)
!KEY_F3<CR>	Function 3 key audio follow mode (Main or PiP)
!KEY_TV<CR>	TV Source Selection
!KEY_FM<CR>	FM Source Selection
!PWRON<CR>	Power On
!PWROFF<CR>	Power Off
?PWR<CR>	Query Power status responds with ~PWRON<CR> or ~PWROFF<CR>
!VOLxx<CR>	Volume Level Set xx=00 to 64 Responds with ~VOL52<cr> for volume level 52. 00 is Mute for this command. 52 is zero dB
?VOL<CR>	Query Volume Level Responds with ~VOL10<CR> for volume level 10.
?MCH<CR>	Query Main Channel Responds with ~MCH002<CR> for channel 2.
!MCHxxx<CR>	Main Channel change !MCH025<CR> for channel 25. xxx = 001 to 125
?MIN<CR>	Main Input Query responds with ~MVID<CR> or ~MSVID<CR> or ~MTV<CR> or ~MRGB<CR> or ~MYPBPR<CR>.
?VER<CR>	Version Query responds with ~VER 1.00<CR> if version 1.00 was present.

### General Info

Unless otherwise noted all valid commands are echoed back if properly received.

When Main TV channel is changed via remote or contact closure, the RS232 is updated by sending a ~MCHxxx<CR> response

When Volume is changed via remote or contact closure, the RS232 is updated by sending a ~VOLxx<CR> response

Invalid commands will reply with ~ERROR<CR>.

## 11.0 Connector Specifications



### DC

2.1mm Power Connector (12 volts)

Center is Positive      Outer Shell is Ground

### CONTROL

**RS232** - Pins 1,3,5      Note: Pin 2 must be disabled with jumper J9 removed (factory default)

Pin 1 - Ground      Pin 3 - TX      Pin 5 - RX

**Contact Closure** - Pins 1,2,4,6      Note: Pin 2 must be enable with jumper J9 on VTune

Pins 1,2: Volume Up

Pins 1,4: Channel +

Pins 1,6: Channel -

Pins 1,2,6: TV

Pins 1,4,6: FM

Pins 1,2,4,6: Volume Down



### Video

#### **Yellow RCA Phono Connector**

Tip - Signal      Sleeve - Ground

### Audio

#### **White & Red RCA Phono Connector**

White is Left Unbalanced Output

Tip - Signal      Sleeve - Ground

Red is Right Unbalanced Output

Tip - Signal      Sleeve - Ground

## 12.0 Troubleshooting

### TV Tuner

**Random noise in video image** - Check antenna position or cable connection. Weak signals can cause noise. Use of an RF Signal amplifier may help. Check the TV Source setting in the menu for proper selection between broadcast, cable, IRC, and HRC.

**White noise** - Check antenna position or cable connection. Check the TV Source setting in the menu for proper selection between broadcast, cable, IRC, and HRC.

**Hum on all channels** - Poor grounding will cause this problem. The cable feed should be grounded at entry into building or house structure. Jensen Transformers model VR-1FF CATV Ground Isolator may also do the trick if the ground problem can not be found.

**Ghosting** - Check antenna position. Sometimes too much gain from the cable source can cause this type of problem. Radio Shack sells 3dB and 6dB attenuators that might help.

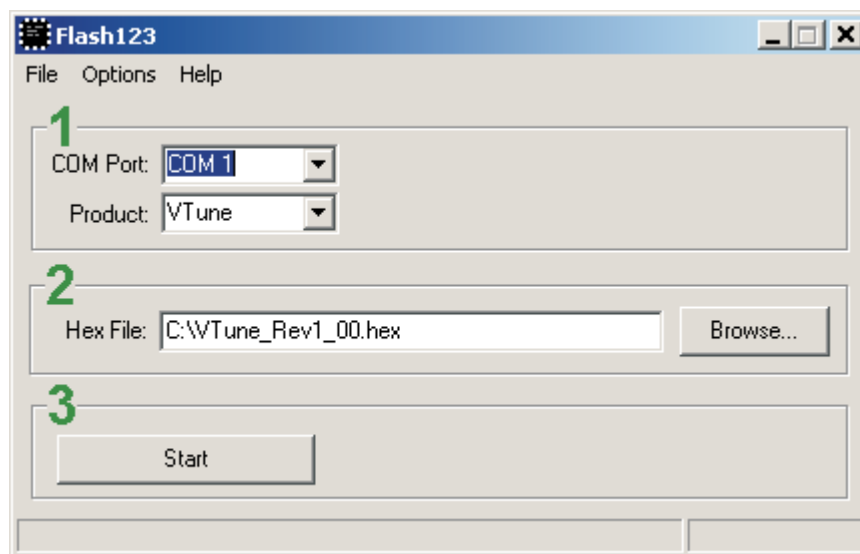
### RS-232

**No Communication** - Make certain PC or control device is set to 9600 8N1.

**'ERROR' is always received** - Some terminal programs send both carriage return and line feed (0Dh, 0Ah) when the enter key is pressed. Make certain it only sends carriage return (0D hex). When writing code try to put a 0Dh 100ms before sending a VTune command to make certain the buffer is empty.

## 13.0 Upgrading Firmware

- 1) Download latest copy of Flash123 from [www.auroramultimedia.com](http://www.auroramultimedia.com) under the VTune product section.
- 2) Download the latest version of firmware.
- 3) Install Flash123 on a Windows 2000 or better machine.
- 4) With the power cord unplugged connect the 6 pin Mini Din to 9 pin RS232 cable between the Control port of the VTune and the Com port of the PC. If you do not have a cable the help menu of Flash123 has the pin out.
- 5) Plug the power connector into the VTune and launch the Flash123 program.
- 6) Select the Com port, then the file, then click on start. The firmware should start uploading. This process could take a few minutes. Do not turn off the power to the VTune or unplug the RS-232 cable when uploading firmware.

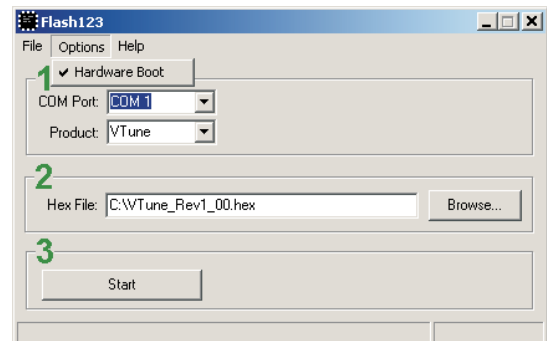


### What to do if flash upgrade fails or is interrupted:

Well everyone needs a backup plan just in case. If a flash upload is interrupted, Flash123 will not work unless Hardware Boot is checked under the options selection. By selecting this, you are telling the Flash123 program it is still in firmware upgrade mode. Once checked click on start again.

If there is difficulty in getting the VTune into boot mode there is a hole large enough for a paper clip in the front panel next to the menu button. With the power unplugged insert and hold the paper clip in while plugging the power in. The LED should not be lit and there will be no output display. Follow the above directions for hardware boot.

If Flash123 is restarted the default for Hardware Boot is unchecked.



## **Limited Warranty**

**Aurora Multimedia Corp.** Warrants that this product is free of defects in both materials and workmanship for a period of 1 year for parts and labor from date of purchase. During the warranty period, and upon proof of purchase, the product will be repaired or replaced (with same or similar model) at our option without charge for parts or labor for the specified warranty period (1 year parts and labor).

This warranty shall not apply if any of the following:

- A) The product has been damaged by negligence, accident, lightning, water, act-of-God or mishandling; or,
- B) The product has not been operated in accordance with procedures specified in operating instructions; or,
- C) The product has been repaired and or altered by other than manufacturer; or,
- D) The product's original serial number has been modified or removed; or,
- E) External equipment other than supplied by manufacturer, in determination of manufacturer, shall have affected the performance, safety or reliability of the product.

In the event that the product needs repair or replacement during the specified warranty period, product should be shipped back to Manufacturer at Purchaser's expense. If requested, an estimate of any applicable charges will be given before the repairs are made.

**No other warranty, express or implied other than Manufacturer's shall apply.**

Manufacturer does not assume any responsibility for consequential damages, expenses or loss of revenue or property, inconvenience or interruption in operation experienced by the customer due to a malfunction in the purchased equipment. No warranty service performed on any product shall extend the applicable warranty period.

This warranty does not cover damage to the equipment during shipping and Manufacturer assumes no responsibility for such damage.

This product warranty extends to the original purchaser only and will be null and void upon any assignment or transfer.

## **FCC Part 15 Statement**

### **RADIO AND TELEVISION INTERFERENCE**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and the receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

You may also find helpful the following booklet, prepared by the FCC: "How to Identify and Resolve Radio-TV Interference Problems." This booklet is available from the U.S. Government Printing Office, Washington D.C. 20402.

Changes and Modifications not expressly approved by the manufacturer or registrant of this equipment can void your authority to operate this equipment under Federal Communications Commissions rules.

In order to maintain compliance with FCC regulations shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio & television reception.